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A three-level classification for describing computer assisted counseling systems is proposed. The first level consists of computer assisted systems which are information processing tools. Second level computer systems go beyond information processing and substitute for counselors in performing certain tasks. These systems, and those on the first level, are totally controlled by the counselor. The memories of such systems are completely available to the controlling counselor. Computer systems at the third level could be described as substitute counselors. Their significance is that their designers and operators would attribute to them certain characteristics found in human counselors, e.g., privileged communication or privacy. Examples of systems at the first two levels are mentioned to provide an operational definition. A rationale is given for the tri-level systems classification. Some suggested uses of third-level substitute computer systems include: (1) a catharsis system, (2) a system permitting dialogue, (3) a behavior reinforcement system, and (4) a developmental monitor system. The question of whether these systems should be developed and, if so, by whom is discussed. (PS)

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Computers As Substitute Counselors: Some Possibilities

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Computers and related technology have a major impact on counseling during the last several years. This is not to suggest that counselors throughout the nation use computers day in and day out to assist in the performance of various counseling tasks. They do not. Counselors in the majority of schools and agencies probably have little if any direct contact with computer assisted systems. However, to the extent that counselors use services such as national testing and college admission programs, they are employing computer technology whether they realize it or not. In addition, a growing number of school systems are using computers, frequently to assist with pupil personnel functions and in these cases counselors are in a sense making direct use of computer technology. In most of these instances however, we suspect, it is someone other than the counselor who decides to use computers.

The significance of the impact of computers on counseling is therefore not the magnitude or universality of use, but rather the selected research and development efforts (mostly development) of a few counselors. Thus while the advancing computer technology is having little operational impact on counseling, it is being applied experimentally continually by some in counseling. Whether or not this is important will ultimately

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depend if and when the profession in general implements what the few are learning. It could be added that counselors are probably much more dependent on computer based systems than they realize, in the sense that continued use is being made of local, regional, and national support systems. It is the acceptance of computer technology as a powerful means of assisting the counseling function which is lacking.

Our concern in this paper is not with describing operating systems, but rather to examine one possible direction in which future research and development efforts might move. Our underlying concern is that the lack of implementation noted above does not discourage the ongoing development of more sophisticated and different computer based systems in counseling.

We want to propose a three-level classification for describing computer assisted counseling systems. At the first level one can identify a number of computer assisted systems which are essentially information processing tools for counselors. These systems in the most part perform traditional information processing tasks faster, and more accurately than manual systems. They often take over certain information storage tasks in addition.

The second level of system which can be identified might be described as substitutes for counselors. There are not as many of these as there are systems of the first level, but there are a few. These systems are designed to go beyond information processing, and substitute for counselors in performing different tasks. These systems, as is true of those at the first level, are totally controlled by the counselor, or his designate. They are viewed as machine systems, and the machine can be turned on and off by the counselor. More important, the memories of such systems are completely available to the controlling counselor.

We come now to the third level of system, and one for which we at least have yet to identify a qualifying member. Computer systems at this level could be described as substitute counselors. Their significance, of course, is that their designers and operators would attribute to them certain characteristics found in human counselors, e.g. privileged communication or privacy.

Our main concern is exploring possibilities of systems at the third level. First, however, we would like to mention examples of systems at the first two levels in the hope of providing a more adequate operational definition of them.

Level I systems have been in existence for some time. They include systems for attendance accounting, grade recording, test scoring and reporting, and maintaining cumulative records. Some of the more advanced examples of these systems integrate a number of such functions, and are sometimes referred to as total information systems. Such systems almost always provide scheduled reports of several kinds, and are open to inquiries by counselors and others. A number of school districts across the country have developed relatively sophisticated systems at this level. Several states, including California, Iowa, and Florida, have developed state-wide systems. The most recent attempt we know of to develop a total information system of this level for a large geographical area is the Oregon Total Information System (OTIS). Initial tests of OTIS are scheduled to begin this summer. (The term "total" information system is somewhat misleading, but it has come to be part of the jargon. The term suggests a degree of sophistication and system integration which is seldom ever found. When complex systems do operate effectively, they usually consist of a number of separate sub-systems, developed somewhat independently, but with careful

provision for system interface.)

There are fewer examples of systems at the second level, that is, systems which are essentially substitutes for counselors. The work of Tiedeman, O'Hare and others at Harvard and the Autocoun system developed by the present authors in conjunction with Cogswell and Estevan at System Development Corporation are examples. In the first version of Autocoun, students at a Palo Alto junior high school were able to carry on an educational course planning dialogue with the computer located in Santa Monica via a TWX. The system has been re-designed and further refined at Palo Alto during the last few years. It is now operational in a junior high school. While there is no need for a counselor to become involved in the dialogue between the student and the computer, the counselor always has access to a written record of the dialogue stored in the computer. There are undoubtedly other such systems under development throughout the country. It should also be noted that systems within the first two levels described are closely related. In most cases, it would be impossible to operate a system of the second level without the information contained in systems of the first level.

Substitute Counselor Systems

Let us turn now to the third level of computer assisted counseling systems, those which would be substitute counselors.

There are at least three assumptions underlying our proposing such systems. First, the requests and "need", i.e. demand, for counselor time is greater than the foreseeable supply. Second, counselees, at least most of them, want to feel that their confidence is respected when discussing personal concerns with the counselor. Third, some counseling functions do not in fact require a great complexity of skills on the part of the counselor. Rather, they involve systematic and consistent (and of course, selective)

use of a few relatively simple skills. Given these assumptions, it is possible to describe several computer based substitute counselor systems.

These systems would have several common characteristics. First, they would possess a repertoire of English (or other) language words. Second, they would have the capability of assembling these words and phrases into sentences - specifically, questions, answers, and comments.

Third, the systems could receive counselee communications. Fourth, they would have the capability to analyze counselee communications and respond selectively to them. Fifth, the resulting dialogue could be conducted on a real time basis. Sixth, the student could initiate and terminate (i.e. contol) the dialogue without assistance.

We would note at this point that current computer technology could produce a system having all of these characteristics.

The final common characteristic has nothing whatsoever to do with computer technology. It is simply that the memory of such systems regarding interaction with a particular individual would be available to others only with the permission of the individual involved. So far, we have not mentioned anything which is not characteristic of a human counselor. There are some limitations to the simulation we have described, obviously, because we are dealing with a machine and not a human. It is possible, however, to imagine ways in which the extent of simulation could be advanced further. The color and facade of the machine could be varied. Both still and moving pictures could be used to increase the"humanness" of the machine, as could such things as imperfect use of language, the presence of odors, etc. Whether or not these would make a significant difference regarding the simulation is not known. The point is simply that they are variables which could be manipulated.

Given the three original assumptions, the basic characteristics noted above, and the possibility of manipulating other variables, several systems can be described, all of which are within the easy reach of technology at this time.

An obvious one to us, would be what one might call a "catharsis system". If one does much counseling, or listens to recordings of others doing it, it is apparent that a good many counseling sequences are devoted to a sensitive listening of the client's description of his feelings and problems. He, the client, does not expect a solution from the counselor, and often does not want one. He simply wants to verbalize, but not to himself. He wants to know that someone is listening, and remembering what he says. In addition, he may want the listener to encourage him to verbalize further. The counseling skills involved are relatively simple, if one takes the idea at face value that the counselee simply wants to be heard. It should not be difficult to develop a computer based system to provide this service.

The most serious problem which counselors have to overcome in such situations is to limit themselves to listening. The urge to suggest, to probe, and to offer analyses and suggestions are frequently difficult to overcome. This of course would not be a problem for the machine.

Probably the most difficult task would be developing a program which would permit the computer to make reasonably sensitive and appropriate responses. "Uh huh", "I see", and "Tell me more about that" can go only so far. Perhaps the counselee could help in this regard by indicating at periodic points the kind of response he would like from the computer. Limits could be set, and when a response beyond the capability of the computer was requested, the computer would simply remind the counselee that this was the case.

industrial office, freely available to individuals who simply want to go in and have a listening session, i.e. people in need of catharsis; in confidence, of course.

A more difficult system to develop, but equally useful, would be one permitting a kind of socratic dialogue. Again, based on our experience with human counselors, a significant amount of counselor time is devoted to leading the counselee through a series of questions and introspections aimed at a final decision or clarification of an idea or attitude. In many such dialogues, the stuff from which an answer will come is already possessed by the counselee. The counselor neither provides answers nor additional information. His function, often, is one of asking thought provoking questions and suggesting areas to be examined.

It does not seem unrealistic to us that a computer could be programmed to provide the same function. An immediate problem would appear to be that of the computer being able to understand the substance or content of counselee statements. As with the first system described, the content may not be as critical after some examination as appears to be at first look. We have done some very cursory analysis of tape recorded counseling sessions of this kind, and it at least appears to us that in such interactions, counselors make surprisingly few references to the substance of the counselee's concern. At least this is true with some counselors. It would not be difficult to obtain a better measure of this.

A third kind of computer based substitute counselor system could be called a behavior reinforcement system. Some would object to this on the grounds of theoretical and/or philosophical orientations, even though they might acknowledge the feasibility of the idea. Granting such objections but not treating them here, one can envision a system designed to reinforce

certain kinds of counselee verbal behavior. Consider for example, a counselee who generally is very ineffective in his relations with other people due to his preoccupation with himself in conversation. Or consider the counselee who continually berates himself in conversation, and as a result, tends to strengthen his own negative self-image.

It is conceivable that in both examples, there are relatively few words which are critical to recognizing behavior which should be of concern. In the first example, they might include "I", "me", and "mine". In the second example they would probably include "poor", "unsure", "fear", "don't know", etc. Further study would probably result in the identification of a list of such descriptors, and a way of identifying larger units of communication which could be given positive or negative values regarding a particular individual involved. If one could provide the computer with the capability of discriminating between the significant words, it would be relatively simple to develop a reinforcement program.

As suggested above, some would argue that this is not counseling, but behavior modification or some such thing. Our position is that something akin to behavior modification takes place in a great many counseling sessions, but it is done poorly and unsystematically by many counselors.

The final example of a substitute counselor system is much more ambitious than the first three noted, in that it would have an ongoing utility for the counselee. You could call such a system a developmental monitor. The purpose would be to assist the individual to plan and evaluate over a significant portion of his life. An individual might initiate use of a system sometime in his early school years. In addition to recording descriptive information, an individual could enter his goals and plans into the system. He could continue to input further information describing his ongoing

behavior. He could instruct the system to give him a variety of outputs all designed to give him feedback regarding his ongoing development in regard to his own goals.

If interfaced with a larger information system, such as one dealing with labor market needs and/or college admission status, the individual could also instruct the system to consider these kinds of variables, that is, to monitor in a normative as well as ideographic manner. Thus, a 26 year old brick-mason might receive a communication from the system indicating a significant change in the labor market outlook. In addition to supplying the information, the system might also list possible alternatives such as moving to a particular area or obtaining certain new training, based on its understanding of the individual and its predictions regarding the labor market. Further, it could provide an opportunity for part of the kind of decision making dialogue described earlier. One could imagine the system providing other kinds of services for the individual beyond "counseling", particularly in the area of education and training. The complexity of services would be similar in concept to other public and private utilities, and paid for on an amount of use basis.

The illustrations of substitute counselor systems we have provided have not gone beyond the current state of computer technology. As the latter develops, there will be a concomitant reduction in the need for human interface between any computer system and the user. Put in other terms, the capability to develop counselor-free counseling systems will increase during the next few years, making at least the first three examples we provided extremely simple.

Strategy

Whether or not such systems ever come to be will depend on many things, obviously. Perhaps the three basic questions which must be answered are: 1) Should they be developed? 2) Who should develop them? 3) How will they be developed?

The third question is beyond the scope of this paper. In closing however, we want to react to the first two.

In regard to whether or not such systems should be developed, the two issues we would anticipate being raised are those of ethics and cost. Many have already objected to the use of computers in counseling, at least at uses which go beyond the first level of systems identified above, saying they are too objective, that they are not sensitive to the subtleties of face-to-face human interaction, and that they can never take into account all the variables involved in counseling. We would ask in reply, can a human counselor? What may be involved is a redefining of counseling and the counselor, or at least an attempt at better defining counseling objectives and outcomes and procedures. Until this is done, we would have to maintain the position that it is impossible to do more than speculate generally on whether or not counseling can be automated to the extent that is implied, and still provide the outcomes commonly attributed to it. The question is critical, however. It would be a serious error to view it as simply a problem of engineering. More basic and critical is the issue of human values.

The question of whether, may in fact, be academic. In a free society, as we have seen, someone ultimately applies technology to whatever interests him, and this is likely to be the case with computers and counselor independent

systems.

The cost question, similarly lacks data for an answer. The best that can be done at this moment is to gather what exists and make estimates.

The question of who should develop such systems may be more to the point. They will be expensive. Should the federal government, the private sector, or local agencies pay the bill - or what portion of the bill should each pay? It has been our observation that the large federally funded projects have had less impact in upgrading education generally and counseling particularly than one would expect, or at least hope. Smaller projects and not infrequently, individuals (some without specific project funding) have made at least equally important contributions. Whether they can continue to do so in regard to the increased complexity of the systems we have been describing is questionable. An important part of the problem is that those who have the understanding and competencies to develop systems, frequently lack the interest and/or resources to demonstrate and implement them effectively on a larger scale. One possible solution is to clearly delineate the two tasks. If this were done, the system developer could be funded without restrictions regarding broader implementation. Give him the research and development funds and provide others with the resources to monitor his work. This obviously is not as simple as saying it, but the idea seems to have merit. In brief, we urge that in regard to federal funding, several criteria be used, permitting both large agencies (public and private), and individuals to participate in development and implementation, and that these be viewed as related but separate tasks.

We would conclude these comments with a brief post script regarding the privileged communication or privacy characteristic mentioned earlier. It has been suggested to us by a colleague, Professor Gordon Dudley, that automated

counseling systems of the kind described at level 3 might appeal to youth at least in terms of ownership, or possessibility. There is an analogy perhaps, in the way in which a teenage driver may use an automobile. With the automobile he is finally in total charge or control or in possession of a powerful means of expression, the vehicle obeys or at least reacts to his commands forcefully. He can use the automobile to demonstrate or to work out a number of needs and emotions. He certainly will encounter limitations, but up to the point of encounter, there will be no interference.

Perhaps automated counseling systems could provide a similar vehicle for free exploration, testing of ideas, and release of hostility. Might not some of us benefit, in regard to improved mental health, by cursing out a machine or complaining to it about one's parents' totally unreasonable attitude. Such a system might have some utility for every member of the family, as a matter of fact. It could be the servant of all without encountering the problems of mixed loyalties and conflict of interest.